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10/069,270

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Junichiro Morioka

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05/21/2004

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SUITE 210  
ALEXANDRIA, VA 22314-2805

EXAMINER

WONG, KIN C

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/069,270

Applicant(s)

MORIOKA, JUNICHIRO

Examiner

K. Wong

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

Claim 4 is objected to because of the following informalities: claim 4 has recited as a method claim while it is depended on an apparatus claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims (1-2 and 4) rejected under 35 U.S.C. 102(b) as being anticipated by Pohl et al (4853810).

Regarding claim 1: Pohl et al discloses a sensor system (in col. 4, lines 6-23 where Pohl et al describes the sensor for head/disk spacing) for a disk device by using a floating head, including:

a rotating disk (element 3 in figure 1 of Pohl et al) having a data recording area;

a head element (element 8 in figures 1 and 2 of Pohl et al) that floats over the data recording area of the disk so as to write data thereon or read data therefrom (as depicted in figures 1 and 2);

a first actuator (VCM – see col. 3, lines 38-45 of Pohl et al) for moving the head element over the data recording area of the disk;

a second actuator (element 7 – see col. 3, lines 38-54 of Pohl et al) being supported by the first actuator and supporting the head element for precise (fine) positioning thereof against the data recording area of the disk; and

a means for detecting any contact between the disk and the head element, by utilizing a signal generated by the second actuator when the disk contacts the head element during an operation of the disk (see col. 4, lines 6-23 of Pohl et al).

Regarding claim 2: Pohl et al teaches that wherein the second actuator is a piezoelectric element (see col. 6, lines 9-24 of Pohl et al).

Regarding claim 4: method claim (4) is drawn to the method of using the corresponding apparatus claimed in claim 1. Therefore method claim 4 corresponds to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

Claims (5-10) are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al (6351341).

Regarding claim 5: Lee et al discloses a sensor system for a disk device by using a floating head (in col. 3, lines 28-38 and col. 4, line 37 to col. 5, line 15 where Lee et al describes the sensory system for detecting head flying height of an air bearing head (or floating head)), including:

a rotating disk (element 106 in figure 2 of Lee et al) having a data recording area;  
a head element (element 161 in figure 2) that floats over the data recording area of a disk so as to write data thereon or read data therefrom (as depicted in figure 2);

a first actuator (VCM – see col. 3, lines 28-35 of Lee et al) for moving the head element over the data recording area of the disk; and

a second actuator supported by the first actuator and supporting the head element for precisely positioning the head element against the data recording area of the disk (in col. 4, lines 27-59 and col. 5, lines 16-29 where Lee et al describes a secondary actuator for positioning the head);

wherein the head element is retreated from a disk surface by the first actuator when the disk is not in operation, and the system further includes a means for detecting a vibration disturbance by utilizing a signal generated by the second actuator due to this vibration disturbance, before the first actuator starts a loading operation of the head element onto the disk surface from a retreat position (see col. 8, lines 10-42 of Lee et al).

Regarding claim 6: Lee et al teaches that wherein the second actuator is a piezoelectric element (in col. 4, lines 37-51 of Lee et al).

Regarding claim 7: Lee et al depicts in figure 1 and 2 that wherein the second actuator is disposed on a load beam of a head suspension (see associated descriptions for details).

Regarding claim 8: Lee et al discloses a sensor system for a disk device by using a floating head (in col. 3, lines 28-38 and col. 4, line 37 to col. 5, line 15 where Lee et al

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describes the sensory system for detecting head flying height of an air bearing head (or floating head), including:

- a rotating disk (element 106 in figure 2 of Lee et al) having a data recording area;
- a head element (element 161 in figure 2) that floats over the data recording area of the disk so as to write data thereon or read data therefrom (as depicted in figure 2);
- a first actuator (VCM – see col. 3, lines 28-35 of Lee et al) for moving the head element over the data recording area of the disk;
- a second actuator supported by the first actuator and supporting the head element for precisely positioning the head element against the data recording area of the disk (in col. 4, lines 27-59 and col. 5, lines 16-29 where Lee et al describes a secondary actuator for positioning the head); and
- a means for canceling a resonance generated between the head element and the second actuator, by applying to the second actuator a signal having a phase opposite to that of a signal generated by the second actuator when the head element is floating (in col. 4, lines 20-33; col. 4, line 66 to col. 5, line 50 where Lee et al describes the phase compensation for the detected air bearing resonance between the head and the disk surface).

Regarding claim 9: Lee et al teaches that wherein the second actuator is a piezoelectric element (in col. 4, lines 37-51 of Lee et al).

Regarding claim 10: Lee et al depicts in figure 1 and 2 that wherein the second actuator is disposed on a load beam of a head suspension (see associated descriptions for details).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim (3) is rejected under 35 U.S.C. 103(a) as being unpatentable over Pohl et al (4853810) in view of Lee et al (6351341).

Regarding claim 3: the reason for Pohl et al is stated rejections above. Pohl et al fails to mention that the second actuator is located on the load beam of the head suspension. Lee et al is relied on for the teachings of the actuator that is located on the load beam of the head suspension (see figure 2 and col. 6, lines 61 of Lee et al).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify fly height detection with the sensor that is mounted on the load beam of the head suspension. The rationale is as follows: one of ordinary would have been motivated to provide an active damping to head as suggested in col. 2, lines 38-46 of Lee et al.

Claims (11 and 12) are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (6351341) in view of Chainer et al (6476989).

Regarding claims 11 and 12: the reason for Lee et al is stated in rejections above. However, Lee et al is silent on the head height detection in a servo writer. Chainer et al is relied on for the teachings of head height detection in a servo writer (see col. 10, line 66 to col. 11, line 16 of Chainer et al).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the head detection of Lee et al into the servo writer as taught by Chainer et al. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide an optimal operating parameter for servo-writing as suggested in col. 11, lines 25-45 of Chainer et al.

Claims (13-15) are rejected under 35 U.S.C. 103(a) as being unpatentable over Pohl et al (4853810) in view of Meyer (4942609).

Regarding claim 13: the reason for Pohl et al is stated in rejections above. However, Pohl et al fails to mention head testing (or head tester in respective to fly height or spacing). Meyer is relied on for the teachings of disk/head testing (or disk/head tester) for flying integrity of the disk/head (see abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify flight height detection of Pohl et al with head testing as taught by Meyer. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide fly ability (or gliding height) of the disk/head in the disk drive as suggested in col. 2, lines 16-24 of Meyer.

Regarding claim 14: the reason for Pohl et al is stated in rejections above. Although Pohl et al discloses disk surface integrity, Pohl et al fails to mention disk testing (or disk tester). Meyer is relied on for the teachings of disk testing or disk tester (see col. 2, line 53 to col. 3, line 2 of Meyer).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify flight height detection of Pohl et al with disk/head testing



as taught by Meyer. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide a fly ability (or gliding height) of the disk/head in the disk drive as suggested in col. 2, lines 16-24 of Meyer.

Regarding claim 15: Pohl et al teaches that wherein it is possible to measure a gliding height of the disk by changing a rotating speed of the disk (in col. 7, lines 16-24 of Pohl et al).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Muranushi et al (5153785) is cited for detecting head height or clearance. Hennecken (5637999), Tain et al (5742446), Flechsig et al (6092412), Yao et al (6667844) and Boutaghou (6568252) are cited for gliding testing. Fioravanti et al is cited for servo writing for flight height.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Wong whose telephone number is (703) 305-7772.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (703) 308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C<sub>kw</sub>

17 May 04

  
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